

Abstract

A method to determine global optimality/feasibility/infeasibility when solving a quadratic system of modeling equations for industrial problems includes a bound propagation process to refine bounds and improve linearization, a local linear bounding process to determine feasibility and find approximately feasible solutions, a local linearization process to determine feasibility and local optimality, and a global subdivision search to branch and prune. Applications include solving and optimizing scheduling, planning, operations, inventory, suppliers, ordering, customers, and production problems.